

HERNIA

* DEFINITION:

(Protrusion of content from cavity to cavity or from cavity to outside - دایره‌ایم زبیده)

- Protrusion of peritoneal sac (with viscus or part of viscus) through an opening of weak part of abdominal wall.

* SITES:

- 1- Inguinal hernia (most common): above inguinal ligament: either:-
 - Direct ing. hernia: through inguinal (Hasselback) triangle.
 - Indirect ing. hernia: through inguinal canal.
- 2- Femoral hernia:- (below ing. lig) → through femoral canal.
- 3- Umbilical hernia:- through umbilicus & periumbilical area.
- 4- Epigastric hernia:- through linea alba above umbilicus (in epigastrium)
- 5- Incisional hernia:- through abdominal scar. → Midway between the umbilicus & xiphoid.
- 6- Others:- rare hernias e.g :-
 - Obturator hernia: through obturator canal.
 - Lumbar hernia: through Lumbar triangle (Δ of Petit).
 - Gluteal hernia: through Greater sciatic foramen.
 - Sciatic hernia: through Lesser sciatic foramen.
 - Spiegelian hernia: through linea semilunaris.
 - Hiatus hernia: through esophageal opening of diaphragm.
 - Morgagni hernia: through diaphragm (between Costal & sternal origin of diaphragm).
 - Puckdalek hernia: through pleuroperitoneal canal [in diaphragm] it is congenital & more on Left side.
 - Divercation of recti:- separation of linea alba (by stretching).
 - Interstitial hernia:- between layers of ant. abdominal wall.

* CLASSIFICATION:-

- 1- According to site:- inguinal, femoral, ... etc.
 - 2- According to aetiology:- Congenital & acquired.
 - 3- According to visualization:- internal (e.g hiatus hernia) & external.
- NB: internal hernia may occur through epiploic foramen or iatrogenic through a defect left in greater omentum.

VISIT...

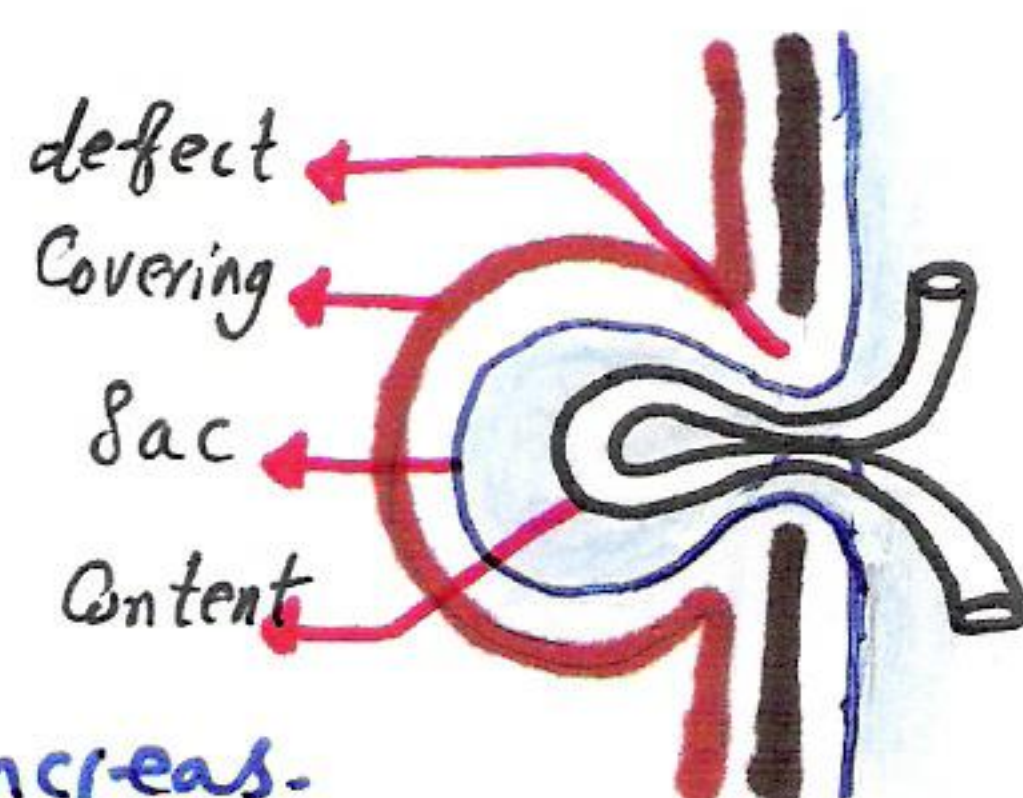
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* AETIOLOGY :-

- (A) Congenital :- e.g. congenital inguinal hernia (remnant ^{vaginalis} Processus ~~var~~)
- (B) Acquired :- due to:
- 1- Increased intra abdominal Pressure :- by:
 - Chronic straining :- Cough, Constipation, benign prostate hyperplasia (BPH)
 - Occupational :- e.g. Porters.
 - Abdominal swelling :- e.g. Ascitis, Pregnancy, hepatosplenomegaly.
 - 2- Weakness of abdominal wall :- by:
 - Obesity & old age.
 - Pregnancy (stretching)
 - Previous operations.

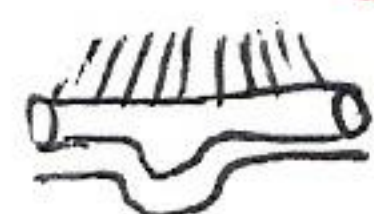
* STRUCTURE :-

- 1- The defect :- through which the sac bulges.
 - 2- The sac :- usually peritoneum (Parietal P.).
 - 3- The Covering :- layers of abdominal wall.
 - 4- The content :- may be any organ "EXCEPT" Pancreas.
- Usually the contents :- intestine or omentum.



	a :- omentum (omentalcele)	b :- intestine (enterocele)
Palpation	Doughy with smooth surface	Soft with Lobulated surface
Percussion	Dull	Resonant
special test	• reducibility of Last part is difficult due to adhesion	- 1st part difficult due to gases. with gurgling.

• special contents :-



a- Richter's hernia: herniation of part of antimesenteric wall of intestine. "occurs with femoral hernia"



b- Maydl's hernia: Two loops of bowel (Hernia in-W) the intermediate loop lies in peritoneal cavity.



c- Littre's hernia: the content is Meckle's diverticulum.

(Like Richter's hernia, strangulation may occur without intest. obst.)

d- Sliding hernia: hernial sac is formed partially by the wall of an organ (e.g. urinary bladder, cecum, ovary-) & sigmoid.

e. Pantaloon (Dual-saddle) hernia: both direct and indirect inguinal hernias that surrounding the inferior epigastric vessels, (it is not rare).

* COMPLICATION : → incarceration

- ① Inflammation: usually due to use of a truss.
- ② Irreducibility: failure to return the contents into abdomen.
 - caused by adhesions between the contents themselves or between contents & sac.
- ③ Obstruction: occlusion of intestinal lumen with intact blood supply.
 - presented by constipation, colics, distension & vomiting.
- ④ Strangulation: intestinal obstruction with seriously impaired blood supply [Pathology: obstruction 1st to vein → ↑ venous pressure → oedema and congestion & hemorrhage → impair arterial blood supply → gangrene which → perforation → peritonitis].

	Irreducible	obstructed	strangulated
Acute obstruction	-	+	+
impulse on cough	+	+	-
Tend & tender	-	-	+

- NB: inflammation can → irreducibility → obstruction → strangulation.
- NB: strangulation can be without intestinal obstruction: in cases of strangulated omentum, Richter's & Littre's hernia.
- Treatment of strangulated hernia :-
 - immediate resuscitation:- Ryle's (NGT) tube, urinary catheter, I.V. fluid, I.V broad spectrum antibiotic.
 - immediate operation and examine intestine if viable or not
 - "Viable intestine:- is pink, lustrous, pulsatile mesentery, bleeds if injured & contracts by pinching." presence of dark or bloody fluid intra-peritoneal + leucocytosis suggest nonviability.
 - if content is omentum excision done (viable or non viable)
 - if viable intestine → reduce to abdomen.
 - if non viable intestine → resection & anastomosis.
 - if Doubtful :- → cover intestine by hot saline + Pure O₂ inhalation, for 15 min then decide if viable or not.

⑤ other complication: as rupture hernial sac & hydrocele of sac.

● NB:- Strangulation varies according to type of hernia:-

- inguinal 2-4%
- incisional 3-5%
- Paraumbilical 15-20%
- Femoral 25-30%

- Although the incidence is higher in femoral hernia yet strangulated inguinal hernia account for >50% (as it is more common).

- Inguinal hernias account for 80% of all spontaneous hernias (umbilical $\approx$ 15%, femoral $\approx$ 5%, others are very rare) →

"as written by Traves D. Crabtree, M.D 2000"

INGUINAL HERNIA

- It is the most common form of hernia, there are two types [Direct & indirect].

	Indirect (oblique) H.	Direct ing. hernia
Age & sex	children & adult male	old age & always in male
site	arise from deep ing. ring.	arise from hasselbach Δ .
side	less common bilateral	more common bilateral
shape	Pyriform commoner(5 times)	rounded. Less common
reduction	upward, backward & laterally (opposite to line of descend)	- Backward only.
Complication	more common	- less common.

* special types of indirect ing. hernia :-

[1] Congenital hernia:- due to persistent Processus vaginalis.

- it reaches scrotum & may appear at adult life.

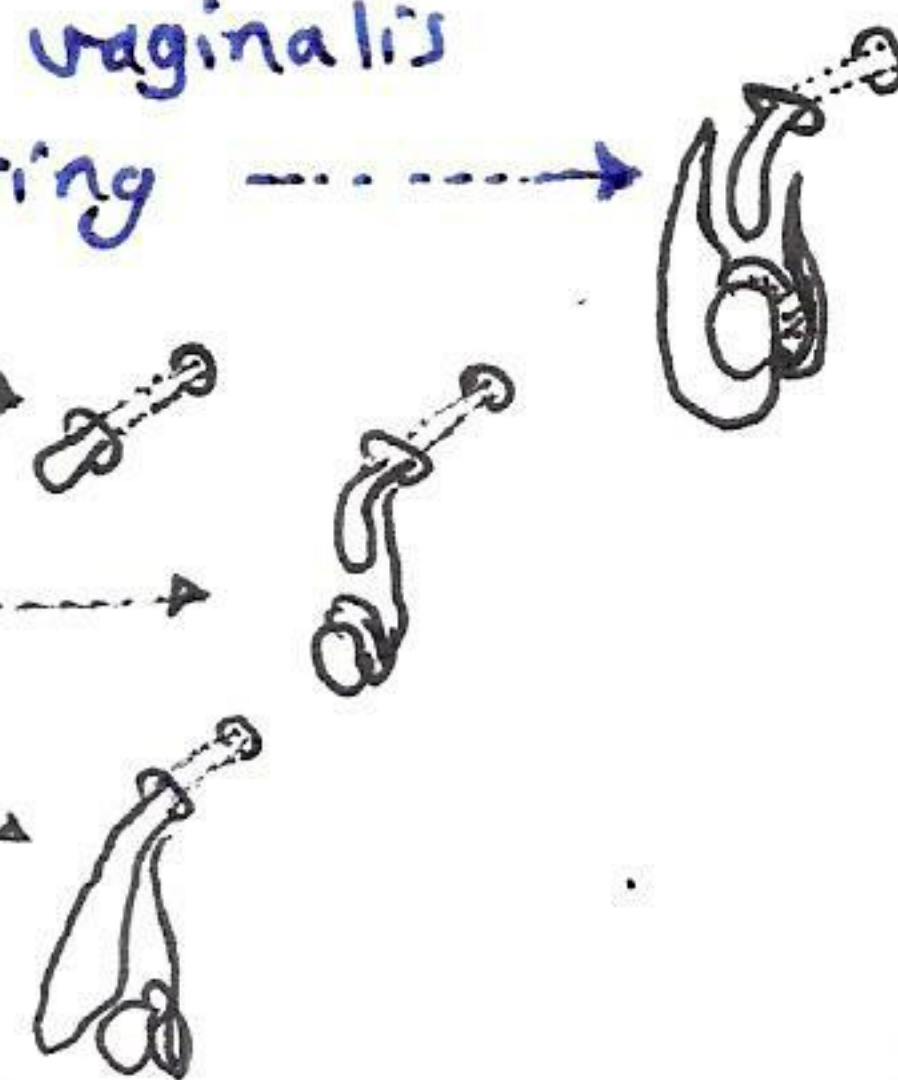
[2] Infantile hernia:- hernia sac passes behind tunica vaginalis which extends up to external ring

[3] Adult type:- which may be:

(A) Bubonocoele: hernia just bulges from ing. canal.

(B) Funicular type: hernia reach up to epididymis.

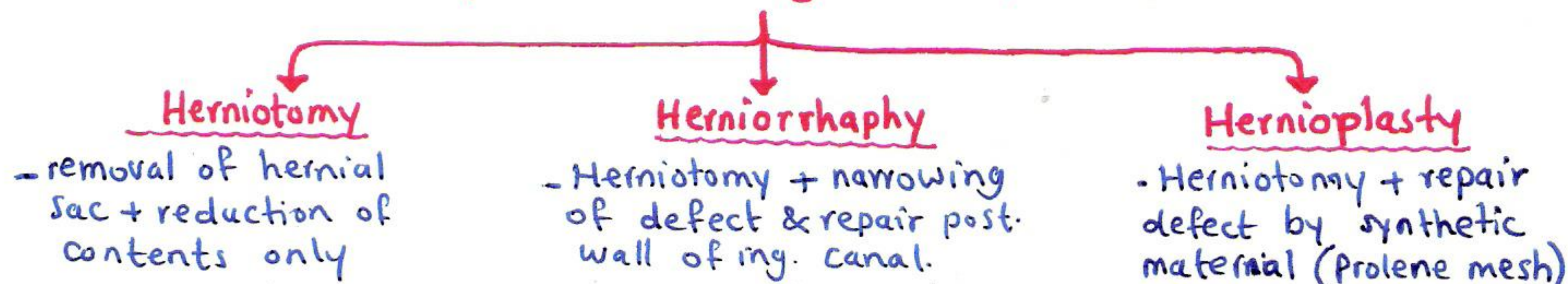
(C) Complete scrotal type: hernia in front of testis



* Management of inguinal hernia:-

- Treatment of hernia is surgery either elective or emergency (if obstructed or strangulated)
- Truss may be used if surgery is contraindicated, but they are (trusses) uncomfortable & unhygienic so the indications for a truss are rare

"operations of ing. hernia (indirect)"



NB: Direct ing. hernia operations are herniorrhaphy and hernioplasty only i.e. no role for herniotomy alone.

[A] Herniotomy:

- indicated with infants & children (<12 yr) → [bec. of good musculature]
- Steps: By incision parallel to medial 2/3 of ing. ligament (1 finger above) external oblique aponeurosis opened, avoid ilioing. nerve & the spermatic cord.
 - Identify the hernia sac (antero-lateral to cord)
 - the sac opened, contents reduced & neck of sac is transfixed and ligated then close in layers.

[B] Herniorrhaphy:

- indicated with large hernial defect in adult [or elderly & good musculature]

(1) **Shouldice repair:-** by dividing the fascia transversalis

Longitudinally then double brusing is done, i.e. the lower flap is sutured to under surface of the upper flap. → enforce post. wall of ing. canal.



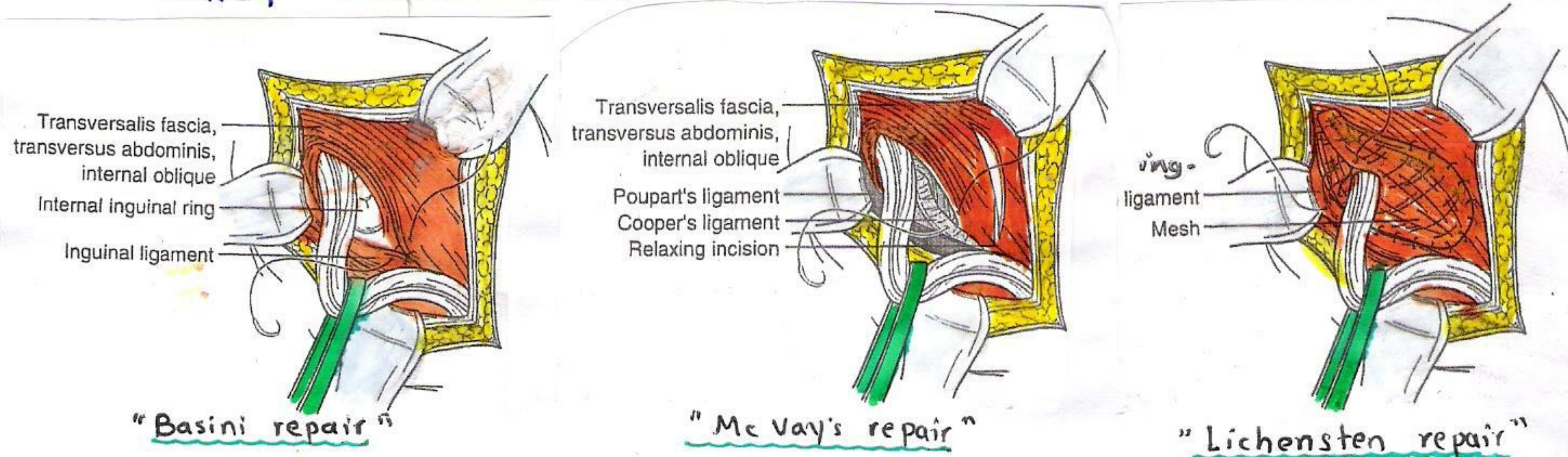
& transv. fascia.

(2) **Bassini repair:-** by stitching the conjoint tendon ↓ down to the inguinal ligament behind the cord.

- It is unphysiological because it interferes with shutter mechanism of ing. canal during ↑ I.A.P. & very weak healing between tendons & ligament.

(3) Mc Vay's repair - approximates the conjoint tendon ^{& transv. fascia} to Cooper's ligament (pectineal lig.)

- This repair requires placement of a relaxing incision in the anterior rectus sheath (to release tension), this is called Tanner slide.



[C] Hernioplasty

- hernioplasty is indicated with old patient (weak musculature) and with wide defect, or recurrent hernias.
- The defect is repaired by synthetic material as proline meshes → operation called "Lichtensten repair"

***NB: Laparoscopy**: may be used to insert synthetic mesh over the hernia defect intraperitoneally [in recurrent or bilateral hernia]

*Post operative complication:

- 1- complication of anaesthesia.
- 2- recurrence of hernia in 3-10% of patients.
- 3- wound infection in 1-3%.
- 4- injury to structures as (ilioing. nerve, iliohypogastric N., genital br. ^{spermatic cord.} etc)
- 5- Seroma & hematoma.
- 6- Temporary urinary retention is common.

EPIGASTRIC HERNIA;
commoner in male (3 times) , 20% are multiple

FEMORAL H.

* Definition:

- Herniation through femoral ring into femoral canal.
- It is acquired (never congenital).

* Incidence:

- The 3rd common after incisional hernia.
- Represents 20% of femal hernia [5% of male hernias].
- Common in female because of wide pelvis & pregnancies.

* Pathology:

- The sac passes through femoral ring downwards in femoral canal then forwards through saphenous opening then it passes upwards & laterally towards A.S.I.S.
- The neck is very narrow & oblique course → very high risk of irreducibility & strangulation. / it is usually of Richter type.

* Clinical picture:

- female (20-40 yr) ~~presenting~~ Rt > Lt side [20% bilateral]
- Presented by mass below & lateral to pubic ~~ligament~~ tubercle or by s/s of complication.
- Reduction is Downwards, backwards & upwards. [clinically impossible].

* Treatment 1. surgery:-

① Low approach (Lockwood): (below ing. ligament.)

- open the sac, reduce contents, transfix as high as possible & excise, repair done to femoral ring by suturing the inguinal lig. to pectineal (Cooper's) lig.



② High approach (Lotheissen's): (above ing. lig.)

- open the inguinal canal & same procedure as above.
- repair by suturing conjoint tendon to inguinal lig (Poupart's lig) then to pectineal (Cooper's) lig.



③ Preperitoneal approach: (pararectal incision)

- opening the posterior rectus sheath & exposing the peritoneum, identify the hernia sac (reduce, transfix & excise)
- repair as Mc Vay's repair.



UMBILICAL H.

A CONGENITAL UMBILICAL HERNIA "Exomphalos" :-

① Exomphalos minor:-

- Small defect ($< 5\text{cm}$) at umbilicus, sac is peritoneum contains usually bowel.
- covering is Wharton's jelly + layers of amniotic membrane.
- treated by reduce contents, excise & repair the defect
- complication by injuring the bowel may occur while ligation of umbilical cord during labour.

② Exomphalos major:-

- Large defect ($> 5\text{cm}$) at abdomen centre, sac is peritoneum contains usually bowel $\pm$ Liver.
- covering are layers of amniotic membrane only.
- treatment difficult as defect is very large & abdomen cannot receive the contents so repair may take $>$ one operation.
- complication as rupture $\bar{=}$ peritonitis (cause of death.)

 = Umbilical hernia

B INFANTILE UMBILICAL HERNIA:

common in female (10 times)

- Caused by weakness of umbilical scar (infection, $\uparrow$ I.A.P. ... etc).
- defect from umbilical scar, sac small with wide neck.
- Usually closed spontaneously within 2 years.
- treatment by surgery (proline stitching of defect) ^{or defect $> 1.5\text{cm}$} ~~may~~ done after 3 yrs.
in 10% only

C ADULT UMBILICAL H. "Paraumbilical H."

- usually in middle aged female [obese, multipara]
- occur just above (more) or below umbilicus (never umbilical).
- Defect in linea alba, narrow neck (more strangulation risk) with crescentic shaped sac.
- Treated by ~~suture~~ suture of the defect (after excising sac) and two-layer overlapping repair "Mayo repair"
- (hernioplasty in large defect) 

INCISIONAL H.

(Ventral hernia)

* Definition:

- Hernia occurs through a defect in the scar of previous surgery.

* Aetiology:

- 1- Age: wound healing is poor in the older patient
- 2- General debility e.g. cancer, cirrhosis.
- 3- obesity.
- 4- Postoperative wound infection & hematoma.
- 5- raised I.A.P after surgery e.g. cough, straining, ileus-----etc
- 6- steroid therapy, anemia, hypoproteinemia
- 7- type of incision: Midline vertical wounds have a higher incidence than transverse incisions (as it is rare in Pfannestiel incision^{C/S}).
- 8- Poor suturing technique (too loose or too tight).

* Clinical Picture:

- May occur up to 5 yrs postop. as swelling through wound.
- usually defect is large (strangulation rare).

* Treatment:

- Small herniae: repair by interrupted nonabsorbable sutures.
- Large herniae: the old scar excised & normal rectus sheath identified, edges approximated with nonabsorbable suture.
- Very large defect may need mesh repair "optimum ttt"
- * recurrence is high (10-20%).

N.B.: BURST ABDOMEN:

- is complete disruption of an abdominal incision in early postop. period

* Aetiology: As incisional hernia + malnutrition, ↓ vit C. usually 6-8 days

* Pathology: - may be complete (separated skin) or partial (intact skin).

- Warning sign (RED sign) = serosanguinous discharge, soaks the dressing.

- If intestine prolapse through wound → called Evisceration.

- If " does not prolapse " " → " Dehiscence.

* Treatment: after resuscitation the wound is closed as one layer by prolene (Tension sutures) the retained at least 3 weeks. and postoperatively Abdominal binder is used.